

TECHNICAL REVIEW DOCUMENT
for
MODIFICATION TO OPERATING PERMIT 99OPBO223

International Business Machines
Boulder County
Source ID 0130006

Prepared by Jacqueline Joyce
October and November 2010

I. Purpose:

This document establishes the decisions made regarding the requested modification to the Operating Permit for International Business Machines (IBM). This document provides information describing the type of modification and the changes made to the permit as requested by the source and the changes made due to the Division's analysis. This document is designed for reference during review of the proposed permit by EPA and for future reference by the Division to aid in any additional permit modifications at this facility. The conclusions made in this report are based on the information provided in the request for modification submitted to the Division on October 6, 2010, e-mail correspondence and telephone conversations with the source. This narrative is intended only as an adjunct for the reviewer and has no legal standing.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised construction permit.

II. Description of Permit Modification Request/Modification Type

The Operating Permit for IBM was renewed on December 1, 2007. The purpose of this modification is to install an additional emergency generator. In addition, IBM is requesting that the requirements for the solvent degreaser (Section II.7 of the permit) be removed since the unit has been removed from the facility.

Colorado Regulation No. 3, Part C, Section X.A identifies those modifications that can be processed under the minor permit modification procedures. Specifically, minor permit modifications "are not otherwise required by the Division to be processed as a significant modification" (Colorado Regulation No. 3, Part C, Section X.A.6).

The Division requires that “any change that causes a significant increase in emissions” be processed as a significant modification (Colorado Regulation No. 3, Part C, Section I.A.7.(a)). According to Part G of Regulation No. 3 (Section I.L, revisions adopted July 15, 1993, Subsection I.G for modifications) the Division considers that a significant increase in emissions is the potential to emit above the PSD significance. Requested emissions from the engine are less than 3 tons/yr for each criteria pollutant and as such are well below the PSD significance levels. The Division calculated the potential to emit for this emergency generator (based on 500 hours per year of operation, in accordance with a September 6, 1995 EPA Guidance memo) as 15.02 tons/yr of NO_x and 3.25 tons/yr of CO, with all other pollutants less than 1 ton/yr. Therefore, since the potential to emit of the proposed new emergency generator is below the significance level the Division considers that this modification qualifies as a minor modification.

In addition, the Division requires that “any change that is considered a modification under Title I of the Federal Act” be processed as a significant permit modification (Colorado Regulation No. 3, Part C, Section I.A.7.b). Part G of Regulation 3 Section I.L, revisions adopted July 15, 1993, Subsection I.G for modifications) describes more specifically what constitutes a modification under Title I of the Federal Act and it indicates that a modification which triggers either Section 111 (NSPS) or 112 (MACT) requirements is considered a Title I modification. This emergency generators is subject to the provisions in 40 CFR Part 60 Subpart IIII; however, other emergency generators in the existing Title V permit are subject to 40 CFR Part 60 Subpart IIII and the appropriate requirements are included in the current Title V permit. Therefore, the Division considers that since no new NSPS requirements will be included in the permit with this modification, it can be processed as a minor modification.

The potential to emit (PTE) for this facility after the modification is shown in the below table:

Emission Unit	Potential to Emit (tons/yr)						
	PM	PM ₁₀	SO ₂	NO _x	CO	VOC	HAPs
19 Emergency Generators and 2 Firewater pumps (95BO557)	2	2	0.6	41.6	14.8	1.7	1.89E-2
8 Emergency Generators (00BO0630)	0.1	0.1	0.2	20.7	7.4	0.24	
Boilers 1 – 4 (94BO366)	3.1	3.1	1.1	50.6	40.3	2.0	6.84E-1
B011W Cooling Tower	1.86	1.86				0.15	3.91E-1*
B011 Cooling Tower	3.08	3.08				0.09	
B003 Cooling Tower	0.9	0.9				0.09	
Nine (9) Emergency Generators (07BO0730)	0.18	0.18	0.05	21.65	2.64	0.53	1.86E-2
Proposed New Emergency Generator	0.03	0.025	0.002	3.0	0.65	0.13	2.49E-3
Total	11.25	11.245	1.952	137.55	65.79	4.93	1.12

*Includes emissions from all cooling towers, several of which are insignificant activities.

In the above table the criteria pollutant PTE is based on permitted emissions or the

appropriate emission factors, design rate and 8760 hours per year of operation.

HAP emissions are based on permitted fuel consumption limits and the appropriate emission factors and/or design rate, the appropriate emission factors and 8760 hours per year of operation.

Greenhouse Gases

In 2009 and 2010, EPA issued two rules related to Greenhouse Gases (GHG) that may affect your facility.

On October 30, 2009, EPA published a rule for the mandatory annual reporting of GHG emissions to EPA from large GHG emissions sources in 40 CFR part 98. You may be required to identify GHG emissions in future Title V permit applications. Such identification may be satisfied by including some or all of the information reported to EPA to meet the GHG reporting requirements.

III. Modeling

With the exception of short term (lb/hr) NO_x and short-term (lbs/day) PM_{2.5}, emissions from all pollutants were below the modeling thresholds specified in the Colorado Modeling Guideline's August 20, 2010 Updated Tables.

In accordance with PS Memo 10-01 (see pages 8-9) the Division's Stationary Sources Program has indicated that for minor source's with requested NO_x and SO₂ emissions less than 40 tons/yr that a compliance demonstration for the short-term (hourly) NO₂ and SO₂ national ambient air quality standards (NAAQS) is not required. Therefore, a modeling analysis was not conducted to assess compliance with the short-term NO₂ NAAQS.

However, the Division did conduct a screen 3 analysis in order to assess compliance with the PM_{2.5} short-term (24-hr) NAAQS. The model results indicate that at the manufacturer's emission rate for PM_{2.5}, impacts are below the significance levels as shown in the table below.

Pollutant	Averaging Time	Maximum Predicted Impact ($\mu\text{g}/\text{m}^3$)	Significance Level ($\mu\text{g}/\text{m}^3$)
PM _{2.5}	24-hour	0.78	1.2

IV. Discussion of Modifications Made

Source Requested Modifications

The Division addressed the source's requested modifications as follows:

Removal of Cold Cleaner Solvent Vat

The source indicated that the solvent vat has been removed from the facility, therefore, the requirements in Section II.7 were removed from the permit.

Addition of New Emergency Generator

Provisions for the New Emergency Generator will be included in Section II.7 (this section previously addressed the cold cleaner solvent vat).

G041: Caterpillar, Model No. C175-16, Diesel Fired Emergency Generator Set, Rated at 4423 maximum hp (3000 kw max), and 29.2 mmBtu/hr (213.2 gal/hr). Serial No. TBD.

1. Applicable Requirements: The following requirements apply to the proposed new emergency generator.

- Construction of this source must commence within 18 months of initial approval permit issuance date or within 18 months of date on which such construction or activity was scheduled to commence as stated in the application (Reg 3, Part B, Section III.F.4.a.(i) thru (ii)).
- Within 180 days after commencement of operation, compliance with the conditions contained on this permit shall be demonstrated to the Division (Reg 3, Part B, Section III.G.2).
- The permittee shall notify the Division, in writing, thirty (30) days prior to startup (Reg 3, Part B, Section III.G.1).

The statute (C.R.S. § 114.5(12)(a)) underlying the startup notification requirement was revised (effective September 1, 2010) to specify that startup notices are required within 15 days after the unit commences operation, therefore, the permit will include the notification requirements specified in the statute.

- Except as provided for below, visible emissions shall not exceed 20% opacity (Reg 1, Section II.A.1)
- Visible emissions shall not exceed 30% opacity, for a period or periods aggregating more than six (6) minutes in any sixty (60) minute period, during fire

building, cleaning of fire boxes, soot blowing, start-up, process modifications, or adjustment or occasional cleaning of control equipment, when burning coal (Reg 1, Section II.A.4)

- Fuel consumption shall not exceed the following limitations (as requested on APEN submitted 10/6/10):

Diesel Fuel	21,320 gallons/yr
-------------	-------------------

- Emissions shall not exceed the following emission limits (as requested on APEN submitted 10/6/10):

- NO_x 3.0 tons/yr

Note that since emissions of other criteria pollutants are below the APEN de minimis level limitations have not been included in the permit for those pollutants.

- SO₂ emissions from the emergency generator shall not exceed 0.8 lb/mmBtu (Reg 1, Section VI.B.4.b.(i))
- RACT for NO_x, CO and PM₁₀ shall be met by complying with the NSPS Subpart III requirements (Reg 3, Part B, Section III.D.2.a)
- RACT for VOC shall be met by complying with the NSPS Subpart III Requirements (Reg 3, Part B, Section III.D.2.a and Reg 7, Section II.C.2)
- 40 CFR Part 60 Subpart III, "Standards of Performance for Stationary Compression Ignition Internal Combustion Engines", as adopted by reference in Colorado Regulation No. 6, Part A, as follows:
 - Emission limitations per § 60.4205(b)
 - Emission limitations shall be met for the time period specified in § 60.4206
 - Fuel requirements per § 60.4205(b)
 - Monitoring requirements per § 60.4209
 - Compliance requirements per § 60.4211
 - Notification, reporting and recordkeeping requirements in § 60.4214
- 40 CFR Part 60 Subpart A, "General Provisions", as adopted by reference in Colorado Regulation No. 6, Part A, as follows:
 - Circumvention (§ 60.12)

40 CFR Part 60 Subpart IIII § 60.4218 identifies the general provisions that

apply. According to the table, the provisions in § 60.7 (notification and recordkeeping) apply as specified in § 60.4214(a) and this section does not apply to this engine, therefore, the provisions in § 60.7 do not apply. The table also indicates that § 60.8 (performance testing) and § 60.13 (monitoring requirements) only apply to engines with a displacement greater than or equal to 30 liters per cylinder and therefore do not apply to this engine. In addition, the table indicates that the provisions in § 60.11 do not apply as the requirements are specified in Subpart IIII.

2. Emission Factors: Approval of emission factors is necessary to monitor compliance with the permit limitations. The following emission factors will be included in the operating permit.

Pollutant	Manufacturer's Emission Rates ¹	
	lb/hr	lb/10 ³ gal ²
PM	0.60	12.5
PM ₁₀	0.49	10.2
PM _{2.5}	0.48	10.0
NO _x	60.08	281.8
VOC	2.56	5.34
CO	13.00	79.8

¹Per AP-42, Section 3.4 (dated 10/96), Table 3.4-2, PM₁₀ = 82.2% of PM and PM_{2.5} = 79.8% of PM.

²Converted to lb/gal based on the fuel usage rate at the highest projected manufacturer's lbs/hr emission rate (for NO_x, this is 100% load (213.2 gal/hr), for CO, this is 75% load (162.8 gal/hr) and for PM and VOC it is 10% load (47.9 gal/hr).

SO₂ emissions are based on a fuel sulfur content of 0.0015 % by weight. This results in an emission factor of 0.213 lb/10³ gal, assuming a diesel density of 7.1 lb/gal.

Note that since PM, PM₁₀, SO₂, CO and VOC emissions were below the APEN de minimis levels at the requested throughput rate, emission limits for those pollutants were not included in the permit.

3. Monitoring Plan: The source shall be required to monitor fuel consumption and calculate emissions monthly. Hours of operation and the maximum hourly fuel consumption rate shall be used to determine fuel consumption from the generator. EPA Reference Method 9 observations shall be required to monitor compliance with the opacity requirements. Compliance with the sulfur dioxide requirements shall be presumed provided the diesel fuel meets the sulfur limitation.

Other Modifications

In addition to the requested modifications made by the source, the Division used this opportunity to include changes to make the permit more consistent with recently issued permits, include comments made by EPA on other Operating Permits, as well as correct errors or omissions identified during inspections and/or discrepancies identified during review of this modification.

The Division has made the following revisions, based on recent internal permit processing decisions and EPA comments on other permits, to the IBM Operating Permit with the source's requested modifications. These changes are as follows:

Section IV – General Conditions

- Added a version date to the General Conditions.
- The title for Condition 6 was changed from “Emission Standards for Asbestos” to “Emission Controls for Asbestos” and in the text the phrase “emission standards for asbestos” was changed to “asbestos control”.
- Labeled the 3rd paragraph of General Condition 29.a as 29.b and added the provisions in Reg 7, Section III.C as paragraph e.

.....

.....